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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/934,698	08/23/2001	Johannes Hubertus Josephina Moors	P 282823 P-0204.020-US	8408
909	7590	12/11/2003	EXAMINER	
PILLSBURY WINTHROP, LLP			NGUYEN, HUNG	
P.O. BOX 10500			ART UNIT	
MCLEAN, VA 22102			PAPER NUMBER	
			2851	

DATE MAILED: 12/11/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Applicati n No.	Applicant(s)	
	09/934,698	MOORS ET AL.	
	Examin r	Art Unit	
	Hung Henry V Nguyen	2851	

-- The MAILING DATE of this communication appears on the cover sheet with the c rrespondence address --
Peri d f r Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on RCE filed 10/9/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-10, 12 and 14-30 is/are rejected.
- 7) ☒ Claim(s) 11 and 13 is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 12/16/02 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s). _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on October 9, 2003 has been entered.

Claim Rejections - 35 USC § 103

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-10, 12, 14-27 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyaji et al (U.S.Pat. 5,559,584) in view of Iizuka et al (JP-62254352A).

With respect to claims 1-10, 12, 14-27 and 30, Miyaji et al discloses a projection exposure apparatus comprising: a radiation system (EXL) for providing a projection beam of radiation; a support structure (RT) for supporting a reticle (R) having a predetermined pattern formed thereon; a projection optical system (PL) for projecting the predetermined pattern formed on the reticle onto a photosensitive substrate; a substrate table (WS) for supporting the substrate; a chamber for enclosing the reticle "during handling, transportation or storage thereof". Miyaji lacks to show a "particle shield" for generating an electromagnetic field "so as to prevent

particles to become incident on an object to be shielded". However, this structure is well known per se. For example, to prevent foreign matter such as dust, particles, which approach to a sample, from being attached to a surface of the sample, Iizuka' 352 teaches arranging an electric field/or magnetic field formation means in the vicinity of the front surface of the sample held on the board (see abstract and fig.1). In view of such teachings, it would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Miyaji and Iizuka to obtain the invention as specified in above mentioned claims. It would have been obvious to a skilled artisan to generate an electromagnetic field as taught by Iizuka within the exposure device of Miyaji for the purpose of preventing particles from being attached onto a predetermined surface of an object and whereby the quality of the exposure apparatus is greatly improved.

4. Claims 28-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyaji et al (U.S.Pat. 5,559,584) in view of Iizuka et al (JP-62254352) and further in view of McCullough (U.S.Pat. 6,445,439).

With respect to claims 28-29, Miyaji et al as modified by Iizuka et al (JP-62254352) discloses substantially all limitations of the instant claims as discussed except for a heater, a plate or a cooler as recited in claims 28-29. However, these structures are well known in the prior art for the purpose of maintaining the temperature of the mask within a predetermined temperature. For example, McCullough (fig.1) discloses an exposure apparatus having a thermal management device (16) for maintaining the temperature of the mask at a desired temperature. It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide

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a thermal management device as taught by McCullough into the exposure apparatus of Miyaji as modified by Iizuka et al for the purpose of controlling the temperature of the mask and improving the quality of the images of the exposure device.

5. Claims 1, 23, 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyaji et al (U.S.Pat. 5,559,584) in view of Akagi, Yuki (JP-401036916A)

With respect to claims 1, 23 and 25, Miyaji et al discloses a projection exposure apparatus comprising: a radiation system (EXL) for providing a projection beam of radiation; a support structure (RT) for supporting a reticle (R) having a predetermined pattern formed thereon; a projection optical system (PL) for projecting the predetermined pattern formed on the reticle onto a photosensitive substrate; a substrate table (WS) for supporting the substrate; a chamber for enclosing the reticle "during handling, transportation or storage thereof". Miyaji lacks to show a "particle shield" for generating an electromagnetic field "so as to prevent particles to become incident on an object to be shielded". However, this structure is well known per se. Yuji teaches an electromagnetic field being generated in and around the inner wall of a combustion chamber for the purpose of preventing charged particles from coming nearer to a wall surface in the combustion chamber. It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the teachings of Miyaji and Akagi'916 to obtain the invention as specified in above claims of the present invention. It would have been obvious to a skilled artisan to generate an electromagnetic field as suggested by Akagi within the exposure device of Miyaji for the purpose of preventing particles from being attached

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onto a predetermined surface of an object and whereby the quality of the exposure apparatus is greatly improved.

Allowable Subject Matter

6. Claims 11 and 13 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. These claims have been found to contain the allowable subject matters since applicant's arguments regarding the patentability of these claims presented on page 4, lines 6-8, and lines 12-15 are found persuasive.

Response to Arguments

6. Applicant's arguments with respect to the prior art of record have been carefully reviewed but they are not found to be persuasive and have been traversed in view of new ground of rejections as set forth above.

The rejection of claims 1-30 under 35 U.S.C. 101 as claiming the same invention as that of claims 1-30 of copending application serial number 09/972,204 is withdrawn since the copending application 09/972,204 has been abandoned.

Turning to the rejection of claims under references of Miyaji (U.S.Pat. 5,559,584) and Iizuka (U.S.Pat. JP-62254352A), applicant argued that there is no motivation to combine these references. The Examiner respectfully disagrees with the applicant. The Applicant is reminded that the rejection here is made under 35 U.S.C. 103(a). Accordingly, there need not be a clear suggestion in the reference of Iizuka' 352 to apply the "electric field formation means or a magnetic field formation means" into an exposure apparatus. The issue here is whether one of

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ordinary skill in the art, in the position of Miyaji would have employed the “electric field formation means/ or a magnetic field formation means” of Iizuka to come up with the application’s invention. As noted in the prosecution history of the present application, Miyaji teaches an exposure apparatus that comprises all of the basic features as recited in the instant claims such as: a radiation system, a support structure for supporting a patterning structure (a mask), a substrate table and a projection system. Applicant argues that “nowhere does Miyaji et al disclose or suggest that particles are present in the exposure or that particle contamination is a problem”. The Examiner respectfully disagrees with the applicant since on column 3, lines 58-63, Miyaji notes that “the charge on the wafer can be removed by supplying an inert gas containing ions or an ionized inert gas, whereby the wafer can be prevented from being damaged”. Thus, it is clearly shown that contamination in the exposure device is a problem and is recognized by Miyaji. In order to prevent the charge/or contamination on the wafer, Miyaji uses “inert gas source” to remove them whereas in the present application, “a particle shield that generates an electromagnetic field” is used “so as to prevent particles from becoming incident on an object to be shielded”. As discussed, and described clearly in the disclosure of Iizuka, in order to prevent *foreign matter* as dust which approach to a sample/or an object, Iizuka teaches an electric field formation means/ or a magnetic field formation means which is arranged in the vicinity of the front of the sample or on a sample board. The electric field formation means as taught by Iizuka is to generate an electromagnetic field to prevent particle such as foreign matter from being incident on the sample to be shield, as recited in the instant claims. In view of such teachings, it would have been obvious to a skilled artisan to replace the “inert gas source” by the electric field formation means as taught by Iizuka into an exposure apparatus (for example, of

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Miyaji) in order to “prevent particles from becoming incident on an object to be shielded”. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Miyaji and Iizuka both bear the same purpose that is to prevent: **contamination of a sample/or substrate caused by charge/or particle from approaching the sample/or wafer.** (emphasis added). The Examiner fails to find applicant's arguments convincing that the claimed invention would have been unobvious to a person having ordinary skill in the art under the teachings of Iizuka and Miyaji. Applicant also argues that Iizuka et al does not suggest “that a particle shield is useful in anything but an ion implantation apparatus”, this argument is not found persuasive since a reading of the Iizuka's disclosure provides no evidence to indicate that Iizuka's particle shield can only be used in an ion implantation apparatus, as argued.

As to claim 9, Applicant argues that Iizuka lacks to show “a grid or array of electrodes” and with regard to claim 14, Applicant argues that Iizuka lacks to show “a radiation source arranged to generate a beam of radiation”; the Examiner respectfully disagrees with the Applicant since Iizuka clearly teaches electrodes 5 and 6 and a beam gate 4 to radiate on a sample (2) (see fig.1). As to claims 28-29, applicant's arguments have been carefully considered but have been traversed as set forth above.

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7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Hung Henry V Nguyen whose telephone number is 703-305-6462. The examiner can normally be reached on Monday-Friday (First Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 703-308-2847. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

hvn
12/4/03



HENRY HUNG NGUYEN
PRIMARY EXAMINER